ACTA METALLURGICA CONTENTS OF VOLUME 35

NUMBER 1

Acta Metallurgica Prize (1984)	i	
S. C. Lim and M. F. Ashby	1	Overview No. 55: Wear-mechanism maps
S. Suresh, A. K. Vasudevan, M. Tosten and P. R. Howell	25	Microscopic and macroscopic aspects of fracture in lithium- containing aluminum alloys
G. Scarsbrook and W. M. Stobbs	47	The martensitic transformation behaviour and stabilisation of rapidly quenched Cu–Zn–Al ribbons
Won-hyuk Rhee, Young-duh Song and Duk N. Yoon	57	A critical test for the coherency strain effect on liquid film and grain boundary migration in Mo-Ni-(Co-Sn) alloy
A. F. Marshall, Y. S. Lee and D. A. Stevenson	61	Crystallization behavior of amorphous Cu ₄₈ Ti ₅₂ : formation of an intermediate long-period superlattice phase
K. E. Sickafus and S. L. Sass	69	Grain boundary structural transformations induced by solute segregation
K. V. Rama Rao and J. A. Sekhar	81	Surface solidification with a moving heat source: a study of solidification parameters
J. D. Hunt and D. G. McCartney	89	Numerical finite difference model for steady state cellular array growth
M. Déchamps, F. Baribier and A. Marrouche	101	Grain-boundaries: criteria of specialness and deviation from CSL misorientation
D. Ríos-Jara and G. Guénin	109	On the characterization and origin of the dislocations associated with the two way memory effect in Cu–Zn–Al thermoelastic alloys—I. Quantitative analysis of the dislocations
D. Ríos-Jara and G. Guénin	121	On the characterization and origin of the dislocations associated with the two way memory effect in Cu-Zn-Al thermoelastic alloys—II. The model for the formation of dislocations
E. Pink and W. M. Webernig	127	Precipitation during serrated flow in AlZn5Mg1
J. A. Horton and M. K. Miller	133	Atom probe analysis of grain boundaries in rapidly-solidified Ni ₃ Al
P. Gall, J. P. Peyrade,R. Coquillé, F. Reynaud,S. Gabillet and A. Albacete	143	Thermal activation of glide in InP single crystals

C. L. Briant 149 Grain boundary segregation of antimony and nickel in iron M. Taya and T. Mori 155 Dislocations punched-out around a short fiber in a short fiber metal matrix composite subjected to uniform temperature change L. C. Lim 163 On the elastic properties of grain boundary dislocations D. H. St John and 171 A simple prediction of the rate of the peritectic trans-L. M. Hogan formation S. N. Tewari and 175 A critical examination of the dendrite growth models: V. Laxmanan comparison of theory with experimental data A. S. Argon 185 Brittle to ductile transition in cleavage fracture R. B. McLellan and 197 The thermodynamics of dilute solutions of hydrogen in M. Yoshihara palladium and its substitutional alloys M. Dollar and 227 The effect of grain size and strain on the tensile flow stress A. W. Thompson of quenched aluminum W. C. Carter and 237 The morphological stability of continuous intergranular A. M. Glaeser phases: thermodynamic considerations J. Wood and 247 Plastic flow instability in a precipitation hardened P. G. McCormick Al-Zn-Mg alloy 253 A potentiostatic double-step method for measuring hydro-R. McKibben, R. M. Sharp, D. A. Harrington, gen atom diffusion and trapping in metal electrodes—I. B. G. Pound and Theory G. A. Wright B. G. Pound, 263 A potentiostatic double-step method for measuring hydrogen atom diffusion and trapping in metal electrodes—II. G. A. Wright and R. M. Sharp Experimental NUMBER 2 Overview No. 56: Monte-Carlo simulations of interstitial R. Kirchheim diffusion and trapping-I. One type of traps and dislocations Overview No. 56: Monte-Carlo simulations of interstitial R. Kirchheim and U. Stolz 281 diffusion and trapping—II. Amorphous metals 293 Pressure effect on elastic after-effect due to oxygen in M.-A. Okamoto niobium—II. Clustering 301 The structure of adiabatic shear bands in metals: a critical S. P. Timothy review 307 Statistical and structural effects during solute-atom segre-A. Brokman gation to grain boundaries

Toru Miyazaki, Kazutaka Isobe, Takao Kozakai and Minoru Doi	317	The phase separations of Fe-Al-Co ordering alloys
P. W. Voorhees and R. J. Schaefer	327	In situ observation of particle motion and diffusion interactions during coarsening
S. Suzuki, G. C. Weatherly and D. C. Houghton	341	The response of carbo-nitride particles in HSLA steels to weld thermal cycles
D. Farkas and V. Rangarajan	353	Geometrical models for symmetrical tilt boundaries in L1 ₂ ordered compounds
V. M. Sample, G. L. Fitzsimons and A. J. DeArdo	367	Dynamic softening of copper during deformation at high temperatures and strain rates
Takayuki Takasugi, Naoya Masahashi and Osamu Izumi	381	Electronic and structural studies of grain boundary strength and fracture in L1 ₂ ordered alloys—III. On the effect of stoichiometry
V. Gerold and J. Kern	393	The determination of atomic interaction energies in solid solutions from short range order coefficients—an inverse Monte-Carlo method
I. Baele, G. Van Tendeloo and S. Amelinckx	401	Microtwinning in Ni–Mn resulting from the $\beta \rightarrow \theta$ martensitic transformation
H. Matsui, N. Yoshikawa and M. Koiwa	413	An in situ observation of hydrogen induced crack in niobium
J. Hirsch, E. Nes and K. Lücke	427	Rolling and recrystallization textures in directionally solidified aluminium
Ph. Lequeu, P. Gilormini, F. Montheillet, B. Bacroix and J. J. Jonas	439	Yield surfaces for textured polycrystals—I. Crystallo- graphic approach
S. Ortner, C. Laird and G. C. Farrington	453	The mechanical response of copper single crystals to corrosion—fatigue in an aqueous oxide-forming environment
J. C. Earthman and W. D. Nix	463	Characterizations of high temperature crack growth in copper and Cu + 1 wt% Sb under different loading conditions
S. C. Jha, T. H. Sanders Jr and M. A. Dayananda	473	Grain boundary precipitate free zones in Al-Li alloys
K. Mahalingam, B. P. Gu,G. L. Liedl andT. H. Sanders Jr	483	Coarsening of $\delta'(Al_3Li)$ precipitates in binary Al–Li alloys

J. A. Juarez-Islas and H. Jones Conditions for growth of extended Al-rich Al-Mn alloy solid solutions and Al-Al₆Mn eutectic during rapid solidification R. Fortunier and J. H. Driver 509 A continuous constraints model for large strain grain deformations H. J. Frost 519 Grain boundary ordering configurations in the L1₂ or Ni₃Al structure H. J. Frost and 529 The effect of nucleation conditions on the topology and C. V. Thompson geometry of two-dimensional grain structures W. Y. Yeung and B. J. Duggan 541 Shear band angles in rolled f.c.c. materials NUMBER 3 E. Sarath Kumar Menon 549 Overview No. 57: Morphology, crystallography and and H. I. Aaronson kinetics of sympathetic nucleation V. Seetharaman, 565 Precipitation and tensile deformation behaviour of a K. Bhanu Sankara Rao. Nimonic 105 superalloy D. Sundararaman and P. Rodriguez J. K. McCoy and R. R. Wills 577 Densification by interface-reaction controlled grainboundary diffusion H. E. Exner 587 Neck shape and limiting GBD/SD ratios in solid state sintering J. J. Lewandowski, 593 Effects of impurity segregation on sustained load cracking C. A. Hippsley, of 2½Cr-1Mo steels—I. Crack initiation M. B. D. Ellis and J. F. Knott L. R. F. Rose 609 Analysis of inelastic bending due to stress-induced martensitic transformation 615 Théorie d'une classe de modèles de Taylor "hétérogenes". M. Arminjon Application aux textures de déformation des aciers F. Hernández Olivares 631 A quantitative assessment of forest-hardening in f.c.c. and J. Gil Sevillano metals C. T. Liu and C. L. White 643 Dynamic embrittlement of boron-doped Ni₃Al alloys at 600°C 651 R. J. Arsenault and M. Taya Thermal residual stress in metal matrix composite The displacive cubic → tetragonal transformation in ZrO₂ A. H. Heuer, R. Chaim 661 and V. Lanteri alloys Microstructural development during intermediate- and T. Ikegami 667 final-stage sintering

L. M. Hogan and H. Song 677 Aluminium grain structures in Al-Si eutectic alloys J. R. Dryden, A. S. Deakin Elastic analysis of deformation near a spherical carbon 681 and G. S. Purdy particle embedded in iron 691 Dislocation motion in alloys with a periodic antiphase A. Faress and G. Vanderschaeve boundaries structure 701 Equilibres liquide-solide dans le système Ni-B-Si dans la S. Lebaili region riche en nickel et S. Hamar-Thibault R. Bonnet, A. Ben Lamine 711 Analyse d'une classe de précipités semicoherents fibreux: cristallographie de l'interface V₃Si/V₅Si₃ et champ de et F. Reynaud déformation J. Teuho, J. Mäki 721 Non-periodic antiphase boundaries in Au₃Zn observed by and K. Hiraga high resolution electron microscopy 727 Vacancy ordered phases and one-dimensional quasi-K. Chattopadhay, S. Lele, N. Thangarai periodicity and S. Ranganathan S. Nagy, A. Vértes, 735 Mössbauer investigation of iron in aluminium—I. Z. Homonnay Al-Fe samples and L. Murgás 741 Mössbauer investigation of iron in aluminium—II. S. Nagy, Z. Homonnay, A. Vértes and L. Murgás Al-Fe-Si samples S. P. Gupta 747 Kinetics of discontinuous coarsening of cellular precipitate in a Ni-8.5 at.%Sn alloy I. C. I. Okafor 759 Diffusion and electrotransport of some transition elements in (b.c.c.) thorium G. Devaud and D. Turnbull 765 Microstructures of undercooled germanium droplets F. Faupel and Th. Hehenkamp The effect of non-random solute distribution around vacancies on the enhancement of solvent and solute diffusion M. Yoshihara, R. B. McLellan 775 The high-temperature elastic properties of palladium single and F. R. Brotzen crystals T. Ishikawa 781 The diffusivity of hydrogen in Pd-Y-H ternary solid and R. B. McLellan solutions A. T. Alpas, L. Edwards 787 Shear crack propagation in a nickel base metallic glass and C. N. Reid

NUMBER 4

A. Kagawa, T. Okamoto and 797 Young's modulus and thermal expansion of pure H. Matsumoto iron-cementite alloy castings

R. C. Ecob and H. E. Evans 805 Creep of TiN dispersion hardened 20%Cr-25%Ni stainless steel below the transition stress T. Takasugi and O. Izumi 823 Geometrical models for grain boundary structures in L2₀ and L1₂ ordered alloys—on the twist boundaries I. Rivollet, D. Chatain et 835 Mouillabilité de l'alumine monocristalline par l'or et l'étain N. Eustathopoulos entre leur point de fusion et 1673 K N. Büttner, K.-D. Fusenig On the additivity of precipitation and solid solution hardand E. Nembach ening in under- and over-aged single crystals of (CuAu)-Co O. Vorren and N. Ryum 855 Cyclic deformation of Al-single crystals at low constant plastic strain amplitudes S. Ortner, C. Laird and The electrochemical response of copper single crystals to G. C. Farrington corrosion-fatigue in an aqueous, oxide-forming environment H. J. Maier, W. Popp and 875 A method to evaluate the critical hydrogen concentration H. Kaesche for hydrogen-induced crack propagation P. Neuhaus and C. Herzig 881 Temperature dependence of the grain boundary diffusion of tin in nickel C. V. Thompson, H. J. Frost 887 The relative rates of secondary and normal grain growth and F. Spaepen H. Kojima, M. Shino and 891 Effects of hydrogen and deuterium on the temperature T. Suzuki dependence of the shear constants C' of vanadium single crystals C. H. Cáceres and S. P. Silvetti 897 Cavitation damage in the superplastic Zn-22% Al-0.5%Cu alloy Y. Enomoto, K. Kawasaki 907 Computer modelling of Ostwald ripening and M. Tokuyama Y. Enomoto, K. Kawasaki 915 The time dependent behavior of the Ostwald ripening for and M. Tokuyama the finite volume fraction 923 Creep failure by degradation of the microstructure and V. Tvergaard grain boundary cavitation in a tensile test M. Enomoto 935 Computer modeling of the growth kinetics of ledged interphase boundaries—I. Single step and infinite train of steps Computer modeling of the growth kinetics of ledged inter-M. Enomoto phase boundaries—II. Finite train of steps J. Lipton, W. Kurz and 957 Rapid dendrite growth in undercooled alloys R. Trivedi Effect of growth rate dependent partition coefficient on the R. Trivedi, J. Lipton and 965 W. Kurz dendritic growth in undercooled melts

R. Trivedi, P. Magnin and W. Kurz

971 Theory of eutectic growth under rapid solidification conditions

K. S. Chan

981 Effect of cross slip on crystallographic cracking in anisotropic single crystals

D. M. Kroeger, G. S. Canright, C. G. McKamey, D. S. Easton and J. O. Scarbrough

NUMBER 5

R. Gerling, F. P. Schimansky and R. Wagner	1001	Restoration of the ductility of thermally embrittled amorphous alloys under neutron-irradiation
S. A. Hackney and G. J. Shiflet	1007	The pearlite-austenite growth interface in an Fe-0.8 C-12 Mn alloy
S. A. Hackney and G. J. Shiflet	1019	Pearlite growth mechanism
Y. Strauven and E. Aernoudt	1029	Directional strain softening in ferritic steel
U. Dahmen, P. Ferguson and K. H. Westmacott	1037	A TEM study of α'' -Fe ₁₆ N ₂ and γ' -Fe ₄ N precipitation in iron–nitrogen
K. C. Goretta and J. L. Routbort	1047	High-temperature deformation of MnO
W. L. Morris, B. N. Cox and M. R. James	1055	Microplastic surface deformation of Al 2219-T851
J. N. Al-Hajji and N. M. Ghoniem	1067	Nucleation of grain boundary cavities under the combined influence of helium and applied stress
A. Kimura and H. K. Birnbaum	1077	The effects of cathodically charged hydrogen on the flow stress of nickel and nickel-carbon alloys
Atul H. Chokshi and Terence G. Langdon	1089	A model for diffusional cavity growth in superplasticity
F. C. Lovey	1103	The fault density in 9R type martensites: a comparison between experimental and calculated results
T. P. Weihs, V. Zinoviev,D. V. Viensand E. M. Schulson	1109	The strength, hardness and ductility of Ni ₃ Al with and without boron
P. Magnin and W. Kurz	1119	An analytical model of irregular eutectic growth and its application to Fe-C

M. Szczerba and A. Korbel 1129 Strain softening and instability of plastic flow in Cu-Al single crystals J. Kulik, S. Takeda 1137 Long period superstructures in Ag₃Mg and D. de Fontaine J. D. L'Ecuyer, 1149 Precipitation behavior of a HSLA steel containing molyb-G. L'Espérance, denum, aluminum and trace amounts of titanium M. G. Akben and B. Bacroix Ph. Lequeu, P. Gilormini, 1159 Yield surfaces for textured polycrystals—II. Analytical F. Montheillet, B. Bacroix approach and J. J. Jonas J. M. Rincon, T. R. Dinger, 1175 Microstructure of mullite/ZrO₂ and mullite/Al₂O₃/ZrO₂ G. Thomas, J. S. Moya tough ceramic composites and M. I. Osendi M. J. Kaufman, 1181 Metastable phase production and transformation in Al-Ge J. E. Cunningham Jr alloy films by rapid crystallization and annealing treatand H. L. Fraser ments NUMBER 6 A. K. Vasudévan and 1193 Overview No. 58: Grain boundary ductile fracture in R. D. Doherty precipitation hardened aluminum alloys K. Sumiyama, H. Ezawa Thermal stability of amorphous $Fe_{1-x}Ti_x$ alloys produced 1221 and Y. Nakamura by vapor quenching R. Vilar et G. Cizeron 1229 Evolutions structurales développées au sein de la phase σ Fe-Cr W. K. Thieringer and 1237 The coarsening of liquid Al-Pb-dispersions L. Ratke J. L. Derep 1245 Microstructure transformation induced by adiabatic shearing in armour steel D. S. Wilkinson 1251 The effect of time dependent void density on grain boundary creep fracture—I. Continuous void coalescence G. Gottstein and 1261 Dislocation theory of steady state deformation and its approach in creep and dynamic tests A. S. Argon J. S. Kirkaldy, D. J. Young 1273 Diffusion profiles associated with the Onsager matrix and J. E. Lane in non-equilibrium A-A*-vacancy and A-B-vacancy solutions Phenomenological study of the plastic behaviour of G. Ferron and 1281 aluminium at low and medium temperatures M. Mliha-Touati B. N. Cox, W. L. Morris 1289 Two-stage microplastic surface deformation in Al and M. R. James 2219-T851

H. W. Green II and 1301 The pressure dependence of creep R. S. Borch 1307 Plastic incompatibility and crack nucleation during V. Jayaram deformation on four independent slip systems in tungsten carbide-cobalt P. Shewmon 1317 Synergism between creep ductility and grain boundary bubbles R. V. Bucur and E. Indrea 1325 Influence of the crystalline microstructure on the diffusivity of hydrogen in palladium galvanostatic permeation and X-ray diffraction measurements M. D. Thouless, A. G. Evans, 1333 The edge cracking and spalling of brittle plates M. F. Ashby and J. W. Hutchinson 1343 Wear-rate transitions and their relationship to wear S. C. Lim, M. F. Ashby and J. H. Brunton mechanisms B. Derby and M. F. Ashby 1349 A microstructural model for primary creep R. Fortunier and 1355 Grain reorientations in rolled aluminium sheet: comparison J. H. Driver with predictions of continuous constraints model E. Gautier, A. Simon 1367 Plasticité de transformation durant la transformation et G. Beck perlitique d'un acier eutectoïde C. W. Price 1377 Simulations of grain impingement and recrystallization kinetics D. L. Yaney, J. C. Gibeling 1391 A new strain rate change technique for distinguishing and W. D. Nix between pure metal and alloy type creep behavior NUMBER 7 J. H. Tweed and J. F. Knott 1401 Overview No. 59: Micromechanisms of failure in C-Mn weld metals P. K. Liaw, T. R. Leax and 1415 Fatigue crack growth behavior of 4340 steels J. K. Donald Shojiro Ochiai, 1433 Influence of two-stage annealing treatment on critical Kozo Osamura and current of bronze-processed multifilamentary Nb₃Sn super-Makoto Ryoji conducting materials Won-hyuk Rhee and 1447 The instability of solid-liquid interface in Mo-Ni alloy Duk N. Yoon induced by diffusional coherency strain J. J. Lewandowski and 1453 Micromechanisms of cleavage fracture in fully pearlitic A. W. Thompson microstructures

Kishore, U. Sudarsan, N. Chandran and K. Chattopadhyay	1463	On the wear mechanism of iron and nickel based transition metal-metalloid metallic glasses
J. C. Earthman and W. D. Nix	1475	Simulations of stable crack propagation based on cavity growth by coupled diffusional and creep processes
M. Rappaz and Ph. Thévoz	1487	Solute diffusion model for equiaxed dendritic growth
A. S. Argon and A. K. Bhattacharya	1499	Primary creep in nickel: experiments and theory
J. Kameda and R. Ranjan	1515	Nondestructive evaluation of steels using acoustic and magnetic Barkhausen signals—I. Effect of carbide precipitation and hardness
J. Kameda and R. Ranjan	1527	Nondestructive evaluation of steels using acoustic and magnetic Barkhausen signals—II. Effect of intergranular impurity segregation
I. Baker, E. M. Schulson and J. A. Horton	1533	In-situ straining of Ni ₃ Al in a transmission electron microscope
L. Martinez, J. Fuentes and V. H. Tapia	1543	Cavity sintering in pure nickel
V. Jaramillo, O. T. Inal and A. Szecket	1549	An impact weldability domain for the amorphous ribbon/ steel system
A. R. Allnatt and A. B. Lidiard	1555	A note on the phenomenological coefficients for atom transport in a dilute random alloy
M. H. Yoo	1559	Stability of superdislocations and shear faults in L1 ₂ ordered alloys
P. Gao and H. Gleiter	1571	High resolution electron microscope observation of small gold crystals
I. C. I. Okafor	1577	Enthalpy contribution to heat of transport
S. C. Colbeck	1583	Theory of particle coarsening with a log-normal distribution
J. Lauzier, J. Hillairet, G. Fantozzi and C. Esnouf	1589	Anelastic phenomena at very low temperatures in relation to point defect-dislocation interactions, in electron irradiated magnesium
A. I. Taub and C. L. Briant	1597	Composition dependence of ductility in boron-doped, nickel-base L1 ₂ alloys
J. W. Hutchinson	1605	Crack tip shielding by micro-cracking in brittle solids
S. Denis, E. Gautier, S. Sjöström and A. Simon	1621	Influence of stresses on the kinetics of pearlitic transformation during continuous cooling

C. S. Pande, L. E. Richards,N. Louat, B. D. Dempseyand A. J. Schwoeble	1633	Fractal characterization of fractured surfaces
C. E. Price and R. G. Norman	1639	A comparison of hydrogen and mercury embrittlement in AISI 4142 steel
L. Cheriet and H. B. Huntington	1649	Effect of indium on lead self-diffusion
L. C. Lim	1653	Surface intergranular cracking in large strain fatigue
L. C. Lim	1663	Cavity nucleation at high temperatures involving pile-ups of grain boundary dislocations
J. M. Carlson and J. E. Bird	1675	Development of sample-scale shear bands during necking of ferrite-austenite sheet
J. B. Leblond, D. Nejem,D. Dubois andS. Talbot-Besnard	1703	Experimental and numerical study of diffusion and trapping of hydrogen in plastically deformed A508.C1.3 steel at room temperature
J. M. Criado and A. Ortega	1715	Non-isothermal crystallization kinetics of metal glasses: simultaneous determination of both the activation energy and the exponent n of the JMA kinetic law
I-Wei Chen	1723	A stochastic theory of grain growth
P. Bowen, S. G. Druce and J. F. Knott	1735	Micromechanical modelling of fracture toughness
Y. Nakayama and K. Morii	1747	Microstructure and shear band formation in rolled single crystals of Al-Mg alloy
H. Kimura, T. Masumoto and D. G. Ast	1757	Yield stress of a composite consisting of amorphous $Ni_{78}Si_{10}B_{12}$ and μm sized WC particles
R. A. Varin and J. Kruszynska	1767	Control of annealing twins in type 316 austenitic stainless steel
B. Ladna and H. K. Birnbaum	1775	A study of hydrogen transport during plastic deformation
M. L. Öveçoğlu, D. M. Barnett and W. D. Nix	1779	Analysis of the interfacial stresses produced by a pile-up of discrete edge dislocations in two phase materials
A. K. Koul and J-P. A. Immarigeon	1791	Modelling of plastic flow in coarse grained nickel-base superalloy compacts under isothermal forging conditions
T. Ogura, T. Watanabe,S. Karashima andT. Masumoto	1807	Dependence of phosphorus segregation on grain boundary crystallography in an Fe-Ni-Cr alloy
D. H. Lassila and H. K. Birnbaum	1815	Intergranular fracture of nickel: the effect of hydrogen- sulfur co-segregation

A. Calka and A. P. Radliński 1823 DSC study of surface induced crystallization in Pd-Si metallic glasses 1831 The influence of scandium on the anomalous self-diffusion C. Herzig and U. Köhler in b.c.c.-zirconium A. Bieber and F. Gautier 1839 Segregation and order in binary substitutional alloys—II. Ground state phase stability diagrams M. L. G. Byrnes, M. Grujicic 1853 Nitrogen strengthening of a stable austenitic stainless steel and W. S. Owen 1863 SAXS and TEM study of the kinetics of phase separation A. R. Forouhi and D. de Fontaine in AlZn S. S. Ezz, D. P. Pope and 1879 Asymmetry of plastic flow in Ni₃Ga single crystals V. Vitek D. Tseng, Q. Y. Long and 1887 An acoustic emission study of martensitic transformation of retained austenite in intercritically annealed HSLA steels K. Tangri D. E. Witmer, G. C. Farrington 1895 Changes in strain localization behavior induced by fatigue and C. Laird in inert environments D. E. Witmer, C. Laird and 1911 On the nucleation of persistent slip bands in fatigued G. C. Farrington copper single crystals Behavior of persistent slip bands in fatigued crystals S. Horibe and C. Laird 1919 containing shearable precipitates. Hysteresis loop analysis and secondary cyclic stress strain curves **NUMBER 8** Overview No. 60: Microstructural evolution in high energy P. Ehrhart, A. A. Gadalla, 1929 W. Jäger and N. Tsukuda helium implanted nickel—I. Room temperature ($T \leq 100^{\circ}$ C) implantation P. Ehrhart, A. Gaber Overview No. 60: Microstructural evolution in high energy 1943 helium implanted nickel—II. Thermal annealing after room and W. Jäger temperature implantation Recovery and recrystallization of copper during stress L. Vazquez, H. J. McQueen 1951 relaxation after hot compression and J. J. Jonas The invariant line and precipitation in a Ni-45 wt% Cr 1963 C. P. Luo and G. C. Weatherly alloy The effect of microstructure and composition on the 1973 M. C. McConnell properties of vapour quenched Al-Cr alloys-I. Young's and P. G. Partridge modulus The effect of microstructure and composition on the 1981 P. G. Partridge properties of vapour quenched Al-Cr alloys-II. Tensile and M. C. McConnell properties 1995 Effect of extended solid solution of Hf on the micro-J. Singh and J. Mazumder structure of the laser clad Ni-Fe-Cr-Al-Hf alloys

2005 Electron microscopical investigations on the precipitation R. Ramlau and H. Löffler of various h.c.p. phases in an Al-6.8 at.% Zn alloy 2015 Plastic flow of Co₃Ti single crystals T. Takasugi, S. Hirakawa, O. Izumi, S. Ono and S. Watanabe The influence of some substitutional alloys on the cleavage N. J. Petch of ferritic steels V. Paidar 2035 A classification of symmetrical grain boundaries 2049 Chemically induced migration in low and high angle calcite R. S. Hay and B. Evans grain boundaries 2063 Solubility of helium in gold J. Laakmann, P. Jung and W. Uelhoff 2071 Hydrogen embrittlement of amorphous alloys based on J. Flis, S. Ashok, iron and nickel N. S. Stoloff and D. J. Duquette 2081 J. J. Lewandowski, Effects of impurity segregation and test environment on C. A. Hippsley sustained load cracking of $2\frac{1}{4}$ Cr-1 Mo steel—II. Crack and J. F. Knott propagation Y. K. Kim, 2091 Dislocation motion and multiplication during the growth R. J. De Angelis, of silicon ribbon C. T. Tsai and O. W. Dillon H. J. Klam, H. Hahn 2101 The thermal expansion of grain boundaries and H. Gleiter T. Magnin and L. Coudreuse 2105 Corrosion fatigue mechanisms in b.c.c. stainless steels P. Franciosi, M. G. Stout, 2115 Channel die tests on Al and Cu polycrystals: study of the J. O'Rourke, B. Erskine prestrain history effects on further large strain texture and U. F. Kocks R. L. Fleischer 2129 Number of active slip systems in polycrystalline brass: implications for ductility in other structures O. Matsumoto, 2137 Crystallography of martensitic transformation in Ti-Ni S. Miyazaki, K. Otsuka single crystals and H. Tamura Kwang-Ryeol Lee, 2145 A critical test for the coherency strain energy as the driving Young-Joon Baik force for the discontinuous precipitation in Mo-Ni alloy and Duk N. Yoon R. B. McLellan and C. Ko 2151 The C-C interaction energy in iron-carbon solid solutions R. Nakkalil and S. P. Gupta 2157 Kinetics of cellular dissolution in an Al-Zn alloy E. Kostlan The preferred habit of a coherent thin-plate inclusion in an 2167 and J. W. Morris Jr anisotropic elastic solid

NUMBER 9

Acta Metallurgica Gold Medal	i	
A. P. Sutton and R. W. Balluffi	2177	Overview No. 61: On geometric criteria for low interfacial energy
M. Dupeux, J. Henriet and M. Ignat	2203	Tensile stress relaxation behaviour of Ni-based superalloy single crystals between 973 and 1273 K.
N. Merk, D. G. Morris and P. Stadelmann	2213	Crystallization processes in Ni-Ti-B glassy alloys of near-ternary-eutectic composition
R. H. Dauskardt, R. D. Pendse and R. O. Ritchie	2227	Effects of pre-existing grain boundary microvoid distributions on fracture toughness and fatigue crack growth in low alloy steel
S. Takeda, J. Kulik and D. de Fontaine	2243	Spinodal ordering beyond the Lifshitz point in Cu ₃ Pd observed by high voltage electron microscopy
E. Blank and N. S. Stoloff	2255	The influence of test frequency on the fatigue resistance of a Ni-base eutectic composite
Young-Joon Baik and Duk N. Yoon	2265	The effect of curvature on the grain boundary migration induced by diffusional coherency strain in Mo-Ni alloy
C. Köstler, F. Faupel and T. Hehenkamp	2273	Precision measurements of nonlinear solvent diffusion enhancement in α -Ag-As alloys
J. Beuers, S. Jönsson and G. Petzow	2277	TEM-in situ deformation of beryllium single crystals—a new explanation for the anomalous temperature dependence of the critical resolved shear stress for prismatic slip
G. M. Bond, I. M. Robertson and H. K. Birnbaum	2289	The influence of hydrogen on deformation and fracture processes in high-strength aluminum alloys
G. Le Gall, D. Ansel et J. Debuigne	2297	Interdiffusion in the body cubic centered β -phase of titanium-hafnium alloys
T. Öztürk and G. J. Davies	2307	Texture softening and strain instability in f.c.c. metals: plane-strain deformation
J. J. Hoyt, M. Sluiter, B. Clark, M. Kraitchman and D. de Fontaine	2315	Anomalous X-ray scattering study of early-stage precipitation in Al–Zn–Ag
D. Bouvard and E. Ouedraogo	2323	Modelling of hot isostatic pressing: a new formulation using random variables
P. Rozenak and D. Eliezer	2329	Phase changes related to hydrogen-induced cracking in austenitic stainless steel
M. Ahmed and D. I. Potter	2341	Elevated temperature microstructural stability of Al ⁺ -ion implanted nickel

B. F. Dyson and T. B. Gibbons 2355 Tertiary creep in nickel-base superalloys: analysis of experimental data and theoretical synthesis 2371 Cyclic deformation of Ni₃(Al, Nb) single crystals at N. R. Bonda, D. P. Pope and C. Laird ambient and elevated temperatures N. R. Bonda, D. P. Pope 2385 The dislocation structures of Ni₃(Al, Nb) single crystals and C. Laird fatigued at ambient and elevated temperatures H. M. Ledbetter, R. J. Fields 2393 Creep cavities in copper: an ultrasonic-velocity and and S. K. Datta composite-modeling study NUMBER 10 2399 Sulphur segregation and high-temperature brittle inter-C. A. Hippsley granular fracture in alloy steels D. Nguyen, A. W. Thompson 2417 Microstructural effects on hydrogen embrittlement in a and I. M. Bernstein high purity 7075 aluminum alloy W. A. Spitzig, A. R. Pelton 2427 Characterization of the strength and microstructure of and F. C. Laabs heavily cold worked Cu-Nb composites M. A. Eshelman 2443 The planar to cellular transition during the directional and R. Trivedi solidification of alloys A. N. Campbell, S. S. Tsao 2453 The effect of Au and Ag additions on the power-law creep and D. Turnbull behavior of Pb K. Aoki, T. Yamamoto, 2465 Amorphization of the CeFe₂ Laves phase compound by Y. Satoh, K. Fukamichi hydrogen absorption and T. Masumoto E. P. George, P. L. Li 2471 Creep cavitation in iron—I. Sulfides and carbides as and D. P. Pope nucleation sites E. P. George, P. L. Li 2487 Creep cavitation in iron—II. Oxides as nucleation sites and D. P. Pope R. J. Cox, P. J. Goodhew 2497 A study of the solidification of argon bubbles in aluminium and J. H. Evans H. D. Chandler 2503 Cyclic strain induced precipitation in a solution treated and J. V. Bee aluminium alloy M. A. Morris 2511 Microstructures and mechanical properties of rapidly and D. G. Morris solidified Cu-Cr alloys P. J. Lee 2523 Development of nanometer scale structures in composites and D. C. Larbalestier of Nb-Ti and their effect on the superconducting critical current density B. Ladna 2537 SIMS study of hydrogen at the surface and grain boundand H. K. Birnbaum aries of nickel bicrystals

M. W. Finnis 2543 The rôle of the interface in determining the orientation of solid rare gas bubbles in metals L. Pandey 2549 A model for lamellar eutectic solidification and P. Ramachandrarao R. Maurer 2557 Improved technique for the determination of low energy boundaries by the rotating-sphere-on-a-plate method: results for grain boundaries in the Cu/Ni system O. B. Pedersen 2567 The flow stress of copper A. J. Levy 2583 Tensile instability in creep damaging solids J. S. Wang, Y.-S. Kim 2593 Controlling factors for crack growth under creep and W. D. Nix conditions NUMBER 11 D. B. Marshall and 2607 Tensile fracture of brittle matrix composites: influence of B. N. Cox fiber strength T. H. Alden 2621 Strain hardening during low temperature creep of 304 stainless steel 2627 Precipitation in a rapidly solidified and aged Ni-Al-Mo P. Nash and T. K. Glasgow J. J. Urcola and C. M. Sellars 2637 Effect of changing strain rate on stress-strain behaviour during high temperature deformation J. J. Urcola and C. M. Sellars 2649 Influence of changing strain rate on microstructure during hot deformation J. J. Urcola and C. M. Sellars 2659 A model for a mechanical equation of state under continuously changing conditions of hot deformation C. S. Pande 2671 On a stochastic theory of grain growth Th. Wille, W. Gieseke and 2679 Quantitative analysis of solution hardening in selected Ch. Schwink copper alloys 2695 The effect of the interface character of TiC particles on Sung Man Lee and Jai Young Lee hydrogen trapping in steel M. Rühle, A. G. Evans, 2701 Microcrack toughening in alumina/zirconia R. M. McMeeking, P. G. Charalambides and J. W. Hutchinson A mathematical model of the austenite-pearlite trans-C. Verdi and A. Visintin 2711 formation in plain carbon steel based on the Scheil's additivity rule

2719 A grain boundary phase transition studied by molecular P. Deymier, A. Taiwo and dynamics G. Kalonji Electromigration of hydrogen in vanadium and its alloys 2731 H. Nakajima, M. Yoshioka and M. Koiwa R. W. Cahn, P. A. Siemers, 2737 The order-disorder transformation in Ni₃Al and Ni₃Al-Fe alloys—I. Determination of the transition temperatures J. E. Geiger and P. Bardhan and their relation to ductility 2753 The order-disorder transformation in Ni₃Al and Ni₃Al-Fe R. W. Cahn, P. A. Siemers alloys—II. Phase transformations and microstructures and E. L. Hall M. Militzer and J. Wieting 2765 Interfacial two-dimensional phase transitions and impurity segregation Potentiel pseudoélastique et plasticité de transformation E. Patoor, A. Eberhardt et 2779 martensitique dans les mono- et polycristaux métalliques M. Berveiller The effect of time-dependent void density on grain D. S. Wilkinson 2791 boundary creep fracture—II. Continuous nucleation 2801 On the grain growth inhibition by second phases particles C. H. Wörner and A. Cabo i Announcement NUMBER 12 P. R. Rios 2805 Overview No. 62: A theory for grain boundary pinning by particles F. J. Humphreys and 2815 Dislocation-particle interactions during high temperature P. N. Kalu deformation of two-phase aluminium alloys W-B. Li, M. F. Ashby and 2831 On densification and shape-change during hot isostatic K. E. Easterling pressing E. Huizer and Reversible and irreversible length changes in amorphous A. van den Beukel Fe₄₀ Ni₄₀ B₂₀ during structural relaxation 2851 Acoustic emission and deformation bands in Al-2.5% Mg C. H. Cáceres and A. H. Rodriguez and Cu-30% Zn G. Regazzoni, U. F. Kocks 2865 Dislocation kinetics at high strain rates and P. S. Follansbee H. Vehoff, C. Laird and The effects of hydrogen and segregation on fatigue crack 2877 D. J. Duquette nucleation at defined grain boundaries in nickel bicrystals M. Isida and S. Nemat-Nasser 2887 On mechanics of crack growth and its effects on the overall response of brittle porous solids R. Kirchheim and J. P. Hirth 2899 Stress and solubility for solutes with asymmetrical distortion fields

R. G. Faulkner	2905	Combined grain boundary equilibrium and non-equilibrium segregation in ferritic/martensitic steels
F. Livet	2915	Linearized inverse Monte Carlo method applied to Ni ₃ Fe
N. P. Louat and B. B. Rath	2921	Plastic flow and the Griffith fracture criterion
M. Rappaz and Ph. Thévoz	2929	Solute diffusion model for equiaxed dendritic growth: analytical solution
B. L. Adams, P. R. Morris, T. T. Wang, K. S. Willden and S. I. Wright	2935	Description of orientation coherence in polycrystalline materials
M. L. Öveçoğlu,M. F. Doerner andW. D. Nix	2947	Elastic interactions of screw dislocations in thin films on substrates
K. S. Vecchio and D. B. Williams	2959	Convergent beam electron diffraction study of Al ₃ Zr in Al–Zr and Al–Li–Zr alloys
J. E. Bird, K. E. Newman, K. Narasimhan and J. M. Carlson	2971	Heterogeneous initiation and growth of sample-scale shear bands during necking of Al-Mg sheet
A. Molinari, G. R. Canova and S. Ahzi	2983	A self consistent approach of the large deformation polycrystal viscoplasticity
R. D. K. Misra, T. V. Balasubramanian and P. Rama Rao	2995 i	On interactions amongst trace and alloying elements at the grain boundaries of a low alloy steel

